EXHIBIT A

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SENTIUS INTERNATIONAL, LLC,
 	
        Plaintiff,
 	
        v.
 	
BLACKBERRY LIMITED and
BLACKBERRY CORPORATION,
 	
        Defendants.
	CIVIL ACTION NO. 2:16-CV-773

DECLARATION OF RICHARD M. GOODIN, P.E.

1.   I am over the age of twenty-one and competent to make this declaration. I am also qualified to give testimony under oath. The facts and opinions listed below are within my personal knowledge.

2.   I provide the following declaration on behalf of BlackBerry Limited and BlackBerry Corporation, defendants in an action brought by an entity called Sentius International, LLC.

3.   I am being compensated for my time in this proceeding at my standard consulting rate of $500/hr. My compensation in no way depends on the outcome of this proceeding, my testimony or the content of my opinions.

4.   I understand that Sentius has sued BlackBerry for infringement of Claim 95 of U.S. Patent No. RE40,731 ("the '731 Patent"), and Claims 17-18, 22, and 50-51 of U.S. Patent No. RE43,633 ("the '633 Patent"). I refer to the '731 Patent and '633 Patent collectively as "the patents-in-suit."

5.   I have been asked to provide my opinions about whether certain claim limitations of the patents-in-suit have corresponding structure in the specification of the patents-in-suit to a person having ordinary skill in the art, whose qualifications I address in more detail below. I have provided those opinions, as requested, below.

INTRODUCTION

6.   My background, qualifications, and experience relevant to the issues in this proceeding are summarized below. My curriculum vitae is submitted herewith as Exhibit 1. As set forth in my CV, I have worked for over 35 years in the field of computer graphics and user interface technology, both graphics hardware and graphics software.

7.   I am currently the President and Chief Consultant of Goodin & Associates, Inc. I have worked or consulted for Fortune 500 companies such as Sperry Univac, Sun Microsystems, Apple Computer, Data General, Tektronix, Mitsubishi, and nVidia. I have worked in roles ranging from a Developer to Chief Scientist.

8.   My principal focus throughout my career has been in computer graphics, both hardware and software, in particular in generating photorealistic imagery. This involves familiarity and implementation of many high-quality rendering algorithms and their implementation in graphics hardware. My career has been spent in implementing graphics rendering in software and then moving that functionality into graphics hardware.

9.   At 3Dfx Interactive, I architected and implemented software for the OpenGL API for the Voodoo and Banshee products and implemented the hardware VGA core for Banshee. At ULSI, I architected one of the first 2D and 3D graphics accelerators using on chip embedded DRAM. At Mitsubishi, I was a memory technology advocate for graphics use of Mitsubishi's CDRAM products.

10.   Prior to and concurrent with my work at Goodin & Associates, Inc., I have been employed by various entities in positions that involved computer graphics hardware and software. For instance, from November 2004 through October 2006, I was employed by Apple Computer, where I architected software and wrote code in Objective-C, C++, and C for 2D and 3D graphics at multiple levels of the OS X (OS ten) operating system during the transition to Intel processors.

11.   From January 1999 through October 1999, I was employed by Raydiant, Inc. as a Chief Scientist and lead hardware and software architect for advanced scalable PC graphics accelerator. My work at Radiant involved architecture and design of high quality rendering algorithms and their hardware implementation. This included implementing system simulation software in C and C++.

12.   From April 1988 through January 1990, Sun Microsystems employed me as a Member of Technical Staff/Architect, where I co-architected and wrote code for the RenderMan compliant, high-quality 3D rendering component of Sun's SunVision visualization product (SunART). This software, which produced photo realistic images of automobiles used by car designers to make style decisions, was implemented in C. I was a member of Pixar's RenderMan Advisory Council. I also co-architected and wrote code for Sun's XGL object oriented proprietary graphics library. While at Sun, I also wrote code for smaller projects such as the graphics library and windowing software for a multiprocessor, a visualization accelerator.   I also ported SunPHIGS to Sun's TAAC-1 application accelerator, and implemented the curve and surface extensions to the TAAC-1 graphics library.

13.   From November 1981 to March 1985, I was employed at Evans & Sutherland, where I reported directly to the Director of Advanced Development, and was responsible for

evaluating rendering algorithms and hardware implementations for high performance commercial and military applications.

14.   From January 1979 to November 1981, I was employed by Sperry Univac GSD as a project engineer, where I designed hardware and wrote code for communications, display and other peripheral devices.

15.   I am a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) and a Senior Member of the Association for Computing Machinery (ACM). The IEEE's is a hardware society whose core purpose is to foster technological innovation and excellence for the benefit of humanity. For admission to the grade of Senior Member, a candidate shall be an engineer in IEEE-designated fields for a total of 10 years and have demonstrated 5 years of significant performance.

16.   The Association of Computing Machinery is the world's largest educational and scientific computing society. Senior member is an earned membership grade awarded to approximately 25% of members who have demonstrated performance that sets them apart from their peers. I am a member of the ACM Special Interest Group for Graphics (SIGGRAPH) and I am a SIGGRAPH Computer Graphics Pioneer. SIGGRAPH Pioneer is an earned member category created by ACM SIGGRAPH, and is earned after twenty years of contributions to computer graphics and/or interactive techniques.

17.   I am licensed as a Professional Engineer in the state of North Carolina, Registration Number 036347. I am also a patent agent, registration number 63,323.

18.   A more detailed description of my work experience and other qualifications can be found in my CV, which is attached as Exhibit 1 to this declaration.

19.   Based on my experience, I believe I am qualified to opine about the state of the art (and the meaning, or lack of meaning, of certain claim terms in the art) of the '731 Patent and the '633 Patent, and whether certain claim terms in the patents-in-suit have corresponding structure in the patents' specifications.

LEVEL OF SKILL IN THE ART

20.   I have been informed that one of the relevant factors in this proceeding is the level of ordinary skill in the pertinent art. I have been informed that the pertinent date for this determination is the date of alleged invention. For purposes of this declaration, I have been asked to assume that the date of invention for the '731 Patent is February 16, 1994. Also for purposes of this declaration, I have been asked to assume that the date of invention for the '633 Patent is February 16, 1994.

21.   In my opinion, a person of ordinary skill in the art as of February 16, 1994 would have had a bachelor's degree in computer science, computer engineering, or the equivalent work experience in computer operating systems, programs and databases, and/or graphical user interfaces.

MY UNDERSTANDING OF THE LAW REGARDING 35 U.S.C. § 112 ¶ 6

22.   I have been informed that 35 U.S.C. § 112 ¶ 6 provides that an element in a claim for a combination may be expressed as a means for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. I have been informed that this is commonly referred to as a "means-plus-function" limitation.

23.   I have been informed that the test to determine whether a claim limitation is a means-plus-function limitation is whether or not the claim limitation recites, from the perspective of one of ordinary skill in the art, definite structure that performs the claimed function.

24.   I have been informed that to invoke 35 U.S.C. § 112 ¶ 6, the alleged means-plus-function claim limitation must not itself recite definite structure which performs the described function.   I have been informed that sufficient structure exists when the claim language specifies the exact structure that performs the functions in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure.

25.   I have been informed that in determining whether to apply the statutory procedures of 35 U.S.C. § 112 ¶ 6, the use of the word "means" triggers a presumption that the inventor used this term advisedly to invoke the statutory mandates for means-plus-function clauses. I have been informed that where software means-plus-function limitations are at issue, the specification of the patent must set forth an algorithm to perform the function, and that simple disclosure of a processor or computer is insufficient (absent a rare exception discussed below). I have been further informed that the courts define an "algorithm" as "a step-by-step procedure for accomplishing a given result," which, in my opinion, accords with the meaning of an "algorithm" in computer science. I have also been informed that such algorithms can be expressed in the specification in any understandable terms including as a mathematical formula, in prose, as a flow chart, in code or pseudocode, or in any other manner that provides sufficient structure. I further have been informed that where there is some disclosure of an algorithm, whether that disclosure is sufficient is judged from the perspective of one of

ordinary skill in the art. Thus, fairly simple and well known algorithms would require less disclosure than unknown, complex ones. However, I have been informed that where there is no disclosure at all of an algorithm, a person of ordinary skill in the art's knowledge is irrelevant. I also have been informed that there is a narrow and rare exception for functions that any general-purpose computer can perform without any special programming, such as "receiving" data, "storing" data, and "processing" data. In these rare circumstances, disclosure of simply a microprocessor or general purpose computer is sufficient without disclosure of an accompanying algorithm.

LIST OF DOCUMENTS CONSIDERED IN FORMULATING MY OPINIONS

26.   In formulating my opinions, I have considered the following documents:

- the '731 Patent;

- the '633 Patent;

- the prosecution histories for both the '731 and '633 patents; and

- Sentius's Local Patent Rule 4-2 Disclosures.

OPINIONS REGARDING U.S. PATENT NO. RE40,731

27.   According to the '731 Patent, the patent relates to "indexing displayed elements. More particularly, the present invention relates to a novel indexing scheme that is useful in such applications as learning a foreign language, for example a language based upon an ideographic alphabet, such as Japanese." Column 1, Lines 15-19. Claim 95 of the '731 Patent, which I understand is the claim from this patent asserted in this lawsuit, reads as follows:

> A system for linking textual source material to external reference material for display, the system comprising:
> (a) means for determining a beginning position address of textual source material stored in an electronic database;
> (b) means for cutting the textual source material into a plurality of discrete pieces;

(c) means for determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address;
(d) means for recording in a look-up table the starting and ending point addresses;
(e) means for linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information;
(f) means for displaying an image of the textual source material;
(g) means for selecting a discrete portion of the displayed textual source material image;
(h) means for determining a display address of the selected discrete portion;
(i) means for converting the display address of the selected discrete portion to an offset value from the beginning position address;
(j) means for comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces;
(k) means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces;
(l) means for retrieving the selected one of the plurality of external reference materials using a recorded link to the selected one of the plurality of external reference materials; and
(m) means for displaying the retrieved external reference material.

28.   I note that Sentius identifies a "processor" throughout its disclosures as part of the corresponding structure for its means-plus function limitations. The '731 Patent never actually discloses a "processor"; instead, its disclosure is to a "personal computer." A person of ordinary skill in the art would have understood that a personal computer includes a processor, but many other computing devices not described in the '731 Patent also include processors. Accordingly, Sentius's proposals that require a "processor" as part of the corresponding structure identified in the patent specification are incorrect because the patent specification never identifies a "processor."

"means for determining a beginning position address of textual source material stored in an electronic database"

29.   I was asked to opine about the meaning that the claim limitation "means for determining a beginning position address of textual source material stored in an electronic database" would have to a person of ordinary skill in the art.

30.   In my opinion, the claimed function is "determining a beginning position address of textual source material stored in an electronic database." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

31.   One skilled in the art would understand that the function of "determining a beginning position address of textual source material stored in an electronic database" cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing" that may be performable by any general purpose computer. Rather, "determining a beginning position address of textual source material stored in an electronic database" is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon

my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function.

32.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that nothing in the '731 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

33.   I also note that Sentius identified in its claim construction disclosures the following portions of the '731 Patent: "visual editor 19 of Fig. 1 and algorithm described in Figures 1 and 2 of the Patents-in-Suit and Col. 5:5-19, 7:1-10, 7:29-45, 8:29-32, 8:50-60 and 10:41-50 of the '731 Patent." There is, however, no algorithm disclosed in these citations that provides a step-by-step procedure for determining a beginning position address of textual source material stored in an electronic database.

34.   Specifically, visual editor 19 of Figure 1 is simply a black box that says the words "VISUAL EDITOR." This is not a step-by-step procedure for performing the identified function, nor is there any such procedure disclosed in Figure 1. Similarly, Figure 2 does not disclose an algorithm, and states no information about how to determine a beginning position address. Col. 5:5-19 discusses the "visual editor 19," but nothing in that section explains how the visual editor determines a beginning position address. Col. 7:1-10 discusses the "word cutting process," but again has no information about determining a beginning position address.

Col. 7:29-45 discusses a process in which "cuts" of text are "indexed based upon the position offset from the beginning of the text," but nothing in that section explains how to determine the beginning of the text. Col. 8:29-32 and Col. 8:50-60 describe the "pull-down" menu structure of an "electronic viewer module" and states nothing about determining the beginning position address. Col. 10:41-50 describes that the "electronic viewer module" and "personal dictionary module" can be searched, but has absolutely no disclosure of determining a beginning position address. Accordingly, Sentius has failed to identify anything even remotely resembling an algorithm for the function of determining a beginning position address of textual source material stored in an electronic" database."

"means for cutting the textual source material into a plurality of discrete pieces"

35.   I was asked to opine about the meaning that the claim limitation "means for cutting the textual source material into a plurality of discrete pieces" would have to a person of ordinary skill in the art.

36.   In my opinion, the claimed function is "cutting the textual source material into a plurality of discrete pieces." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term

does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

37.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. While Column 7, Lines 1-10 provides some explanation of the cutting process, it is my opinion that the '731 Patent does not sufficiently disclose an algorithm to perform this function. Column 7, Lines 1-10 recites:

> "[t]he word cutting process is accomplished using a simple visual editor, for example a point and click system using a pointing device, such as a mouse. The process divides the text into the individual components of text that are linked with the additional reference material. The original text is provided by a publisher in electronic form in a raw binary text format (e.g. an ASCII text file or other word processor file). This text is then divided up into the component word or phrases in preparation for the next step."

38.   In considering whether the '731 Patent discloses an algorithm for the "means for cutting," I considered whether the "word cutting process" described in the patent and quoted above is an automated process, or a process performed manually by a human using a mouse. As an example, in an automated process, an algorithm would automatically parse and cut the text into individual components. In a manual process, on the other hand, a human might use a mouse to draw boxes around individual Japanese words or phrases (or otherwise indicate where the words/phrases, *i.e.*, discrete pieces, start and stop), using the Japanese embodiment provided through the specification of the '731 Patent.

39.   As to an automated process of cutting text, it is my opinion that the '731 Patent specification provides no algorithm for doing so. And while there is some semblance of a manual process disclosed in the patent in Column 7, Lines 1-10, it is my understanding that structure which requires human input is insufficient, and that if there is no structure disclosed that actually performs the claimed function without human input, the specification thus lacks

corresponding structure.   It is thus my opinion that the only language in the '731 Patent potentially corresponding to an algorithm for performing the claimed function of this limitation requires human input (as the '731 Patent discloses no way that a visual editor can cut text without a human).   Therefore, it is my opinion that the specification lacks corresponding structure regardless of whether the "means for cutting" is an automated or manual process.

40.   I also note that Sentius identified in its disclosures the following portions of the '731 Patent: "visual editor 19 and grammar parser 23 of Fig. 1, and algorithm described in Figures 1 and 2 of the Patents-in-Suit and Col. 5:5-19, 7:1-20, 7:40-45, 8:29-32 and 8:39-48 of the '731 Patent." To the extent Sentius asserts the '731 Patent discloses an automated algorithm for this process, I disagree, as none is disclosed in the above citations.

41.   Specifically, visual editor 19 of Figure 1 is simply a black box that says the words "VISUAL EDITOR." This is not a step-by-step procedure for performing the identified function, nor is there any such procedure disclosed in Figure 1. Similarly, Figure 2 does not disclose an algorithm, and states no information about how to cut textual source material into a plurality of discrete pieces. Col. 5:5-19 discusses the "visual editor 19," but nothing in that section explains how the visual editor cuts text. Col. 7:1-10 discusses the "word cutting process," as described above, but does not disclose any mechanism to cut text besides a human manually doing so. Col. 7:10-20 discusses "linking" and does not discuss how textual source material is "cut." 7:40-45 discusses a process in which a "component word or phrase" (i.e., text that was cut) is "selected." However, nothing in that section explains how the "cuts" are actually made. Col. 8:29-32 and Col. 8:39-48 describe the "pull-down" menu structure of an "electronic viewer module" and states nothing about cutting the textual source material into a plurality of discrete pieces. It does reference a "Cut" menu, which "cuts a highlighted block of

text." This, however, is referring to the "cut" function, which copies and deletes. This is a standard function in most operating systems and programs, and can be accomplished in Microsoft Windows and Microsoft Word using the "cut" function or the keyboard shortcut of "CTRL+X." Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of cutting the textual source material into a plurality of discrete pieces.

"means for determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address"

42.   I was asked to opine about the meaning that the claim limitation "means for determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address" would have to a person of ordinary skill in the art.

43.   In my opinion, the claimed function is "determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address" of the textual source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

44.   One skilled in the art would understand that the function of "determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address" of the textual source material cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing" that may be performable by any general purpose computer. Rather, "determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address" of the textual source material is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function.

45.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that nothing in the '731 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

46.   I also note that Sentius identified in its disclosures the following portions of the '731 Patent: "visual editor 19, wordified database 20, grammar parser 23, and link engine 22 of Fig. 1 and algorithm described in Figures 1 and 2 of the Patents-in-Suit and Col. 5:5-19, 6:46-

57, 7:1-10, 7:21-49, 8:29-32, and 8:39-48 of the '731 Patent." No algorithm for the claimed function, however, is disclosed by these citations.

47. Specifically, visual editor 19, wordified database 20, grammar parser 23, and link engine 22 of Figure 1 are simply black boxes. This is not a step-by-step procedure for performing the identified function, nor is there any such procedure disclosed in Figure 1. Similarly, Figure 2 does not disclose an algorithm, and states no information about how to determine a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address. Col. 5:5-19 discusses the "visual editor 19," "wordified database 20," "grammar parser 23," and "link engine 22," but nothing in that section explains how to determine the starting and ending point addresses. Col. 7:1-10 discusses the "word cutting process," but again has no information about determining starting and ending point addresses. Col. 7:21-49 discusses that the "start" and "end points" of text are "recorded in a look-up table," which is then used for "comparing" with the "offset." This section, however, does not explain how the "start" and "end points" are actually determined. Col. 8:29-32 and Col. 8:39-48 describe the "pull-down" menu structure of an "electronic viewer module" and state nothing about determining "starting" and "ending point addresses." Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address.

"means for recording in a look-up table the starting and ending point addresses"

48.   I was asked to opine about the meaning that the claim limitation "means for recording in a look-up table the starting and ending point addresses" would have to a person of ordinary skill in the art.

49.   In my opinion, the claimed function is "recording in a look-up table the starting and ending point addresses" of the plurality of discrete pieces. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

50.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that nothing in the '731 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

51.   It is my understanding, however, that a narrow and rare exception exists where a means-plus-function limitation that does not have corresponding structure or an algorithm in

the patent specification may still be permissible if any general purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. It is my understanding that this exception generally extends to "storing" data.

52.   It is my opinion that this limitation involves the narrow exception discussed in the preceding paragraph. One skilled in the art would understand that the function of "recording in a look-up table the starting and ending point addresses" of the plurality of discrete pieces could be performed by a general purpose computer, because this function is the same as the generic function of "storing" that may be performable by any general purpose computer. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses a structure to perform the function recited in this limitation; that structure is "a personal computer programmed to record in a look-up table the starting and ending point addresses" of the plurality of discrete pieces. The corresponding structure is found in Column 4, Lines 7-8.

53.   I also note that Sentius claims that this limitation is not a means-plus-function limitation and also identified in its disclosures the following portions of the '731 Patent: "visual editor 19 and wordified database 20 in Fig. 1 and Fig. 2 of the Patents-in-Suit and Col. 5:5-15, 6:46-65, 7:1-10, 7:40-45, 8:29-32 and 8:39-48 of the '731 Patent." To the extent Sentius asserts the '731 Patent discloses an algorithm for this process of recording, I disagree, as none is disclosed in the above citations, beyond the "personal computer" disclosed at Column 4, Lines 7-8.

"means for linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information"

54.   I was asked to opine about the meaning that the claim limitation "means for linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information" would have to a person of ordinary skill in the art.

55.   In my opinion, the claimed function is "linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure or algorithm for performing the recited function. In my opinion, the language of this limitation partially conveys to one of ordinary skill in the art the requisite structure to perform the "means for linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials." Namely, it recites that this is done "by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external

- 19 -

reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information." However, the limitation does not recite the "personal computer," which is disclosed at Column 4, Lines 7-8 of the '731 Patent, and would be needed to perform this recording. In addition, the '731 Patent does not disclose an algorithm in any form (pseudocode, mathematical formulas, prose, flow charts, and the like) for this "recording."

56.   It is my understanding, however, that a narrow and rare exception exists where a means-plus-function limitation that does not have corresponding structure or an algorithm in the patent specification may still be definite if any general purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. It is my understanding that this exception generally extends to "storing" data.

57.   Thus, it is my opinion that this limitation involves the narrow and rare exception explained above, where a means-plus-function limitation that does not have corresponding structure or an algorithm in the patent specification may still be permissible if any general purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. In this instance, the "recording" portion of the "means for linking" limitation falls under this exception in that a general purpose computer performing the generic function of "storing" data can perform this "recording" function. Also, as stated above, it is my opinion that the language "by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video,

and picture information" describes the algorithm by which a general purpose computer would perform the linking function recited by this limitation.

58.   Thus, it is my opinion that one skilled in the art would understand that the function of "linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials by recording in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information" can be performed by a general purpose computer via the algorithm recited in this limitation.   Accordingly, the structure is "personal computer programmed to record in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information." The corresponding structure is found in Column 4, Lines 7-8.

59.   I also note that Sentius claims that this limitation is not a means-plus-function limitation and also identified in its disclosures the following for structure: "a processor storing a pointer in the data structure for a given offset value range that points the system to at least one corresponding external reference material for that offset value range, and equivalents thereof," citing "link engine 22, wordified database 20, grammar parser 23 linked entities 25, 26, 27 indexor 29, [and offset index 35] in Fig. 1 and algorithm described in Fig. 2 of the '731 Patent at look-up table 201/202 and Col. 5:5-28, 6:46-65, 7:11-20, 7:29-49, 8:29-32 and 8:39-48 of the '731 Patent."   To the extent Sentius asserts that this limitation is not a mean-plus-function limitation, I disagree, because, "means for linking at least one of the plurality of

discrete pieces to at least one of a plurality of external reference materials" is a means-plus-function limitation that requires sufficient structure in order to perform the function, as described above, and none of the above citations disclose an algorithm for "recording," beyond the "personal computer" described at Column 4, Lines 7-8. In fact, most of Sentius's citations appear completely unrelated to this claim limitation.

"means for displaying an image of the textual source material"

60.   I was asked to opine about the meaning that the claim limitation "means for displaying an image of the textual source material" would have to a person of ordinary skill in the art.

61.   In my opinion, the claimed function is "displaying an image of the textual source material." I was asked to provide an opinion as to whether the language of this phrase would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

62.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this limitation. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses structure to perform

the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "personal computer" and an "electronic display of a personal computer."

63.   I also note that Sentius identified in its disclosures the following for structure: "a processor displaying a portion of a text file." This, however, cannot be correct because a "processor" cannot display anything. To display something, you need a display. As a simple demonstration, if one unplugs his or her monitor, his or her computer will not display anything. While a processor might be able to send data for display, it cannot actually accomplish the function of displaying. Similarly, the "personal computer" is part of the requisite structure, because a monitor or display cannot perform this function unless there is a computer that can actually send the information to be displayed.

64.   Additionally, Sentius references in its disclosures "description in connection with mouse/position 200 in Fig. 2 together with electronic viewer 43 in Fig. 1 and display 204 in Fig. 2 and Fig. 3 of the Patents-in-Suit and at Col. 5:20-44, 6:46-65, 7:21-49 and 7:51-55 of the '731 Patent." Many of these citations appear to have no connection to the function at issue in this limitation. The citations do reference the "screen display" in Figure 3. This is an example of what would be displayed on the "electronic display" of the "personal computer." Figure 3 by itself though is just an exemplar of what is displayed, and not actual structure capable of doing the displaying.

means for selecting a discrete portion of the displayed textual source material image"

65.   I was asked to opine about the meaning that the claim limitation "means for selecting a discrete portion of the displayed textual source material image" would have to a person of ordinary skill in the art.

66.   In my opinion, the claimed function is "selecting a discrete portion of the displayed textual source material image." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

67.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this limitation. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses structure to perform the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "a personal computer," an "electronic display of a personal computer" and Column 6, Lines 50-51, which recites: a "pointing device, such as a mouse."

68.   I also note that Sentius identified in its disclosures the following for structure: "a processor determining the location on a display where a user input was received." This is incorrect, and it actually does not relate to this limitation but instead to the function provided by the next limitation in Claim 95: "means for determining a display address of the selected discrete portion." In order to select displayed text as this limitation requires, the specification discloses using a "pointing device" and of course the "personal computer" and "electronic

display" are necessary structure, otherwise one using the pointing device wouldn't be able to select anything or see what was being selected.

"means for determining a display address of the selected discrete portion"

69.   I was asked to opine about the meaning that the claim limitation "means for determining a display address of the selected discrete portion" would have to a person of ordinary skill in the art.

70.   In my opinion, the claimed function is "determining a display address of the selected discrete portion" of the displayed textual source material image. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

71.   One skilled in the art would understand that the function of "determining a display address of the selected discrete portion" of the displayed textual source material image cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing"

that may be performable by any general purpose computer. Rather, "determining a display address of the selected discrete portion" of the displayed textual source material image is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function. The '731 Patent does not do that.

72.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that nothing in the '731 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

73.   I also note that Sentius identified in its disclosures the following for structure: "a processor determining the display coordinates of the user input. Not MPF. (But see, User interface 32, user display 38, application program 42, data resource 34, offset index 35 and linked entities 36 of Fig. 1 together with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:46-65 and 7:40-49 of the '731 Patent.)" Nowhere in the specification, however, including the citations provided by Sentius, is there a "step-by-step procedure" for performing this function.

74.   Specifically, none of Sentius's identified citations provide an algorithm for actually determining the "display coordinates of the user input." The various items listed by

Sentius in Figure 1 are simply black boxes that do not describe how to perform the identified function. The description of Figure 1 at Col. 5:20-33 provides no further information. Figure 2 describes display coordinates that were clicked (100, 75); however, it provides no algorithm for how those coordinates were determined. Col. 6:46-65, which describes Figure 2, states the "click position is determined," but again doesn't explain how this is accomplished, *i.e.*, it doesn't provide an algorithm. Col. 7:40-49 has a similar disclosure, but again doesn't explain how the "location of the pointer is determined." Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of determining a display address of the selected discrete portion.

"means for converting the display address of the selected discrete portion to an offset value from the beginning position address"

75.   I was asked to opine about the meaning that the claim limitation "means for converting the display address of the selected discrete portion to an offset value from the beginning position address" would have to a person of ordinary skill in the art.

76.   In my opinion, the claimed function is "converting the display address of the selected discrete portion to an offset value from the beginning position address" of the textual source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the

function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

77.   One skilled in the art would understand that the function of "converting the display address of the selected discrete portion to an offset value from the beginning position address" of the textual source material cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing" that may be performable by any general purpose computer. Rather, "converting the display address of the selected discrete portion to an offset value from the beginning position address" of the textual source material is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function.

78.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that nothing in the '731 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

79.   I note that Figure 2, and the corresponding text in the specification, show a user clicking at the horizontal and vertical coordinates of (100,75) (*i.e.*, 100 rows down, and 75 columns over) and then an offset value of "25" being returned. *See* '731 Patent, Col. 6, Lines 51-57. This does not describe a simple algorithm of subtracting 75 from 100. And even if it did, that algorithm would not perform the claimed function, as this does not provide an offset "from the beginning position address." As a demonstration of this, assume a user clicks at horizontal coordinates of (125, 100). This too would return an offset of "25." But plainly (125, 100) is further from the "beginning position address" than (100, 75). Perhaps a clearer demonstration is if the coordinates (200, 200) are selected. If simple subtraction were the algorithm, the offset would be "0." This would indicate the "beginning position address" was selected, which certainly is not the case.

80.   I also note that Sentius identified the following portions from the specification as disclosing the structure: "User interface 32, user display 38, application program 42, data resource 34, offset index 35 and linked entities 36 of Fig. 1 together with mouse /position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:46-65 and 7:40-49 of the '731 Patent.)." There, however, is no step-by-step procedure disclosed in any of these citations for how to determine the offset value from the beginning position address.

81.   Specifically, the various items listed by Sentius in Figure 1 are simply black boxes that do not describe how to perform the identified function. The description of Figure 1 at Col. 5:20-33 provides no further information. Figure 2 describes that an offset value of "2" is determined; however, it provides no algorithm for how those coordinates were determined. Col. 6:46-65, which describes Figure 2, states "an offset value of 25 is returned," but again doesn't

explain how this is accomplished, *i.e.*, it doesn't provide an algorithm. Col. 7:40-49 has a similar disclosure, but again doesn't explain how the "position offset from the beginning of the text" is determined. Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of converting the display address of the selected discrete portion to an offset value from the beginning position address.

"means for comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces"

82.   I was asked to opine about the meaning that the claim limitation "means for comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces" would have to a person of ordinary skill in the art.

83.   In my opinion, the claimed function is "comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces" of textual source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

84.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses structure to perform the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "a personal computer," and Figure 2, Column 6, Lines 56-65 and Column 7, Lines 45-49, which describe "a personal computer programmed to determine whether the offset value falls between the starting and ending point addresses for the plurality of discrete pieces of textual source material stored in the look-up table to identify one of the plurality of discrete pieces of textual source material as a match when the offset value falls between that discrete piece's starting and ending point addresses."

85.   I also note that Sentius claims that the structure for this function is "a processor programmed to perform the step of matching the identified offset value with one of the offset value ranges stored in the data structure, and equivalents thereof," citing "User Interface 32, user display 28, application program 42, data resource 34 and offset index 35 of Fig. 1 together with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:48-65 and 7:40-49 of the '731 Patent to match the identified offset value with one of the offset value ranges stored in the data structure." Sentius's explanation of the structure, however, is circular, because it does not explain how the "matching" occurs. As I described above, and as is explained in the specification, this matching occurs by comparing the offset value against the start and end points of each discrete piece in the look-up table and identifying a match when the offset values falls within the start and end points of a discrete piece.

"means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces"

86.   I was asked to opine about the meaning that the claim limitation "means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces" would have to a person of ordinary skill in the art.

87.   In my opinion, the claimed function is "selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces." I was asked to provide an opinion as to whether the language of this phrase would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

88.   The language "means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces" also does not specify with reasonable certainty to one of ordinary skill in the art the scope of the limitation. Because "selecting" must mean something different from "identifying" that is in the previous limitation, this limitation possibly refers to the process of creating a dropdown box and allowing a user to select one of the dropped down options, as illustrated in Figure 3. This is not entirely clear from the claim language and specification though.

89.   It is my opinion that the function of "selecting one of the plurality of external

reference materials corresponding to the identified one of the plurality of discrete pieces"

cannot be performed by any general purpose computer, but instead must be performed by a

general purpose computer specially programmed with a particular algorithm to perform this

function. The function is not analogous to the generic function of "processing" that may be

performable by any general purpose computer. Rather, "selecting one of the plurality of

external reference materials corresponding to the identified one of the plurality of discrete

pieces" is a specialized function particular to this purported invention, and it would require a

particular algorithm. Based upon my knowledge and experience, a general purpose computer

cannot do this unless it is specially programmed to do so. It is my understanding that, in a

situation like this, where the function is only performable by a general purpose computer that is

specially programmed, the specification must disclose an algorithm for performing the

function. The '731 Patent does not do that, no matter how this limitation is interpreted.

90.   To the extent the limitation refers to creating a pop-up menu and allowing a user

to select from the menu, as illustrated in Figure 3, there is no algorithm set forth in the '731

Patent for how that would occur. In coming to this conclusion, I looked in the '731 Patent for

an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts,

and the like. I did not locate an operative algorithm for this claimed function.

91.   I also note that Sentius claims that the structure for this function is: "Structure: a

processor programmed to perform the step of using the pointer for the matched offset value

range to identify a corresponding external reference material, and equivalents thereof (See,

User interface 32, pop-up display 40, application program 42 and table 202 of Fig. 2 together

with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the

Patents-in-Suit and algorithm described at Col. 5:20-33, 6:48-65, 7:20-39 and 7:42-49 of the '731 Patent to obtain the linking information to the corresponding reference material for the matched offset value.).''

92.   Sentius's interpretation, however, cannot be correct. Sentius appears to be confused as to what the claim recites. Sentius indicates that this limitation "identifie[s] a corresponding external reference material."   But the previous limitation claimed that identification: "means for comparing the offset value with the starting and ending point addresses recorded in the look-up table *to identify one of the plurality of discrete pieces*."   In fact, the present limitation sets forth that "one of the plurality of discrete pieces" has already been "*identified*."   I also note that none of Sentius's citations to the patent disclose the process of how one or more discrete pieces are displayed to the user for selecting. Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces.

 "means for retrieving the selected one of the plurality of external reference materials using a recorded link to the selected one of the plurality of external reference materials"

93.   I was asked to opine about the meaning that the claim limitation "means for retrieving the selected one of the plurality of external reference materials using a recorded link to the selected one of the plurality of external reference materials" would have to a person of ordinary skill in the art.

94.   In my opinion, the claimed function is "retrieving the selected one of the plurality of external reference materials using a recorded link to the selected one of the plurality of external reference materials."   I was asked to provide an opinion as to whether the language

of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

95.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that nothing in the '731 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

96.   It is my understanding, however, that a narrow and rare exception exists where a means-plus-function limitation that does not have corresponding structure or an algorithm in the patent specification may still be permissible if any general purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. It is my understanding that this exception generally extends to "receiving," "storing", and "processing" data.

97.   It is my opinion that this limitation involves the narrow exception discussed in the preceding paragraph. One skilled in the art would understand that the function of

"retrieving the selected one of the plurality of external reference materials using a recorded link to the selected one of the plurality of external reference materials" could be performed by a general purpose computer, because this function is analogous to the generic function of "storing" that may be performable by any general purpose computer. In fact, "retrieving" is simply the analog to "storing." If a computer can store data, it certainly can later retrieve that data. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses a structure to perform the function recited in this limitation; that structure is "a personal computer programmed to retrieve the selected one of the plurality of external reference materials using a recorded link to the selected one of the plurality of external reference materials" The corresponding structure is found in Column 4, Lines 7-8.

98.   I also note that Sentius disclosed the following portions of the '731 Patent as the structure for performing this function: "User interface 32, pop-up display 40, application program 42 and table 202 of Fig. 2 together with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:57-62 and 7:40-49 of the '731 Patent." To the extent Sentius asserts the '731 Patent discloses an algorithm for this process of retrieving, I disagree, as none is disclosed in the above citations, beyond the "personal computer" disclosed at Column 4, Lines 7-8.

"means for displaying the retrieved external reference material"

99.   I was asked to opine about the meaning that the claim limitation "means for displaying the retrieved external reference material" would have to a person of ordinary skill in the art.

100.   In my opinion, the claimed function is "displaying the retrieved external reference material." I was asked to provide an opinion as to whether the language of this

phrase would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '731 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

101.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this limitation. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses structure to perform the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "a personal computer" and an "electronic display of a personal computer."

102.   I also note that Sentius identified in its disclosures the following for structure: "a processor displaying obtained reference material." This, however, cannot be correct because a "processor" cannot display anything. To display something, you need a display. As a simple demonstration, if one unplugs his or her monitor, his or her computer will not display anything. While a processor might be able to send data for display, it cannot actually accomplish the function of displaying. Similarly, the "personal computer" is part of the requisite structure, because a monitor or display cannot perform this function unless there is a computer that can actually send the information to be displayed.

103.   Additionally, Sentius references in its disclosures "description in connection with user interface 32, pop-up display 40, user display 38 and electronic viewer 43 in Fig. 1 and display 204 in Figures 2 and 3 of the Patents-in-Suit at Col. 5:29-44, 6: 57-62, 7:37-40 and 7:51-55 of the '731 Patent."   These citations reference "displaying," but don't reference the actual structure used to display.   The citations also reference a "screen display" in Figure 3. This is an example of what would be displayed on the "electronic display" of the "personal computer." Figure 3 by itself though is just an exemplar of what is displayed, and not actual structure capable of doing the displaying.

OPINIONS REGARDING U.S. PATENT NO RE43,633

104.   According to the '633 Patent, the patent relates "to indexing displayed elements. More particularly, the present invention relates to a novel indexing scheme that is useful in such applications as learning a foreign language, for example a language based upon an ideographic alphabet, such as Japanese."   Column 1, Lines 26-31. Claim 17 of the '633 Patent, which I understand is the independent claim from this patent asserted in this lawsuit, reads as follows:

> A system for linking textual source material to external reference materials for display, the system comprising:
> (a) means for determining a beginning position address of a textual source material stored in an electronic database;
> (b) means for cutting the textual source material into a plurality of discrete pieces;
> (c) means for determining starting point addresses and ending point addresses of the plurality of discrete pieces based upon the beginning position address;
> (d) means for recording in a look-up table the starting and ending point addresses;
> (e) means for linking the plurality of discrete pieces to external reference materials by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference materials, the external reference materials comprising any of textual, audio, video, and picture information;
> (f) means for selecting a discrete portion of an image of the source material;
> (g) means for determining a display address of the selected discrete portion;

(h) means for converting the display address of the selected discrete portion to an offset value from the beginning position address;

(i) means for comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces;

(j) means for selecting one of the external reference materials corresponding to the identified one of the plurality of discrete pieces; and

(k) means for displaying on a computer the selected one of the external reference materials.

105.   As I noted for the '731 Patent above, Sentius identifies a "processor" throughout its disclosures as part of the corresponding structure for its numerous means-plus function limitations. The '633 Patent never actually discloses a "processor"; instead, its disclosure is to a "personal computer." A person of ordinary skill in the art would have understood that a personal computer includes a processor, but many other computing devices not described in the '633 Patent also include processors. Accordingly, Sentius's proposals that require a "processor" as part of the structure identified in the patent specification are incorrect because the patent specification never identifies a "processor."

"means for determining a beginning position address of a textual source material stored in an electronic database"

106.   I was asked to opine about the meaning that the claim limitation "means for determining a beginning position address of a textual source material stored in an electronic database" would have to a person of ordinary skill in the art.

107.   In my opinion, the claimed function is "determining a beginning position address of a textual source material stored in an electronic database." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art

anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

108.   One skilled in the art would understand that the function of "determining a beginning position address of a textual source material stored in an electronic database" cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing" that may be performable by any general purpose computer. Rather, "determining a beginning position address of a textual source material stored in an electronic database" is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function.

109.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '633 Patent, it is my opinion that nothing in the '633 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '633 Patent for

an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts,
and the like. I did not locate an operative algorithm for this claimed function.

110.   I also note that Sentius identified in its claim construction disclosures the
following portions of the '731 Patent: "visual editor 19 of Fig. 1 and algorithm described in
Figures 1 and 2 of the Patents-in-Suit and Col. 5:5-19, 7:1-10, 7:29-45, 8:29-32, 8:50-60 and
10:41-50 of the '731 Patent."[1] There is, however, no algorithm disclosed in these citations that
provides a step-by-step procedure for determining a beginning position address of textual
source material stored in an electronic database.

111.   Specifically, visual editor 19 of Figure 1 is simply a black box that says the
words "VISUAL EDITOR." This is not a step-by-step procedure for performing the identified
function, nor is there any such procedure disclosed in Figure 1. Similarly, Figure 2 does not
disclose an algorithm, and states no information about how to determine a beginning position
address. Col. 5:5-19 discusses the "visual editor 19," but nothing in that section explains how
the visual editor determines a beginning position address. Col. 7:1-10 discusses the "word
cutting process," but again has no information about determining a beginning position address.
Col. 7:29-45 discusses a process in which "cuts" of text are "indexed based upon the position
offset from the beginning of the text," but nothing in that section explains how to determine the
beginning of the text. Col. 8:29-32 and Col. 8:50-60 describe the "pull-down" menu structure
of an "electronic viewer module" and states nothing about determining the beginning position
address. Col. 10:41-50 describes that the "electronic viewer module" and "personal dictionary
module" can be searched, but has absolutely no disclosure of determining a beginning position

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[1] I assume that Sentius did not provide separate citations to the '633 Patent because the
disclosures between the '731 and '633 Patents are very similar.

address. Accordingly, Sentius has failed to identify anything even remotely resembling an algorithm for the function of determining a beginning position address of textual source material stored in an electronic" database."

"means for cutting the textual source material into a plurality of discrete pieces"

112.   I was asked to opine about the meaning that the claim limitation "means for cutting the textual source material into a plurality of discrete pieces" would have to a person of ordinary skill in the art.

113.   In my opinion, the claimed function is "cutting the textual source material into a plurality of discrete pieces." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

114.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this phrase. While Column 7, Lines 1-10 provides some explanation of the cutting process, it is my opinion that the '633 Patent does not sufficiently disclose an algorithm to perform this function. Column 7, Lines 1-10 recites:

"[t]he word cutting process is accomplished using a simple visual editor, for example a point and click system using a pointing device, such as a mouse. The process divides the text into the individual components of text that are linked with the additional reference material. The original text is provided by a publisher in electronic form in a raw binary text format (e.g. an ASCII text file or other word processor file). This text is then divided up into the component word or phrases in preparation for the next step."

115.   In considering whether the '633 Patent discloses an algorithm for the "means for cutting," I considered whether the "word cutting process" described in the patent and quoted above is an automated process or a process performed manually by a human using a mouse. As an example, in an automated process, an algorithm would automatically parse and cut the text into individual components. In a manual process, on the other hand, a human might use a mouse to draw boxes around individual Japanese words or phrases (or otherwise indicate where the words/phrases, i.e., discrete pieces, start and stop), using the Japanese embodiment provided through the specification of the '633 Patent.

116.   As to an automated process of cutting text, it is my opinion that the '633 Patent provides no algorithm for doing so. And while there is some semblance of a manual process disclosed in the patent in Column 7, Lines 1-10, it is my understanding that structure which requires human input is insufficient, and that if there is no structure disclosed that actually performs the claimed function without human input, the specification thus lacks corresponding structure. It is thus my opinion that the only language disclosed in the '633 Patent potentially corresponding to an algorithm for performing the claimed function of this limitation requires human input (as the '633 Patent discloses no way that a visual editor can cut text without a human). Therefore, it is my opinion that the specification lacks corresponding structure regardless of whether the "means for cutting" is an automated or manual process.

117.   I also note that Sentius identified in its disclosures the following portions of the '731 Patent: "visual editor 19 and grammar parser 23 of Fig. 1, and algorithm described in

Figures 1 and 2 of the Patents-in-Suit and Col. 5:5-19, 7:1-20, 7:40-45, 8:29-32 and 8:39-48 of the '731 Patent." To the extent Sentius asserts the '731 Patent discloses an automated algorithm for this process, I disagree, as none is disclosed in the above citations.

118.   Specifically, visual editor 19 of Figure 1 is simply a black box that says the words "VISUAL EDITOR." This is not a step-by-step procedure for performing the identified function, nor is there any such procedure disclosed in Figure 1. Similarly, Figure 2 does not disclose an algorithm, and states no information about how to cut textual source material into a plurality of discrete pieces. Col. 5:5-19 discusses the "visual editor 19," but nothing in that section explains how the visual editor cuts text. Col. 7:1-10 discusses the "word cutting process," as described above, but does not disclose any mechanism to cut text besides a human manually doing so. Col. 7:10-20 discusses "linking" and does not discuss how textual source material is "cut." 7:40-45 discusses a process in which a "component word or phrase" (i.e., text that was cut) is "selected." However, nothing in that section explains how the "cuts" are actually made. Col. 8:29-32 and Col. 8:39-48 describe the "pull-down" menu structure of an "electronic viewer module" and states nothing about cutting the textual source material into a plurality of discrete pieces. It does reference a "Cut" menu, which "cuts a highlighted block of text." This, however, is referring to the "cut" function, which copies and deletes. This is a standard function in most operating systems and programs, and can be accomplished in Microsoft Windows and Microsoft Word using the "cut" function or the keyboard shortcut of "CTRL+X." Accordingly, Sentius has failed to identify anything even remotely resembling an algorithm for the function of cutting the textual source material into a plurality of discrete pieces.

"means for determining starting point addresses and ending point addresses of the plurality of discrete pieces based upon the beginning position address"

119.   I was asked to opine about the meaning that the claim limitation "means for determining starting point addresses and ending point addresses of the plurality of discrete pieces based upon the beginning position address" would have to a person of ordinary skill in the art.

120.   In my opinion, the claimed function is "determining starting point addresses and ending point addresses of the plurality of discrete pieces based upon the beginning position address" of the textual source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

121.   One skilled in the art would understand that the function of "determining starting point addresses and ending point addresses of the plurality of discrete pieces based upon the beginning position address" of the textual source material cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing" that may be performable by

any general purpose computer. Rather, "determining starting point addresses and ending point addresses of the plurality of discrete pieces based upon the beginning position address" of the textual source material is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding from counsel that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function.

122.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '633 Patent, it is my opinion that nothing in the '633 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '633 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

123.   I also note that Sentius identified in its disclosures the following portions of the '731 Patent: "visual editor 19, wordified database 20, grammar parser 23, and link engine 22 of Fig. 1 and algorithm described in Figures 1 and 2 of the Patents-in-Suit and Col. 5:5-19, 6:46-57, 7:1-10, 7:21-49, 8:29-32, and 8:39-48 of the '731 Patent." No algorithm for the claimed function, however, is disclosed by these citations.

124.   Specifically, visual editor 19, wordified database 20, grammar parser 23, and link engine 22 of Figure 1 are simply black boxes. This is not a step-by-step procedure for performing the identified function, nor is there any such procedure disclosed in Figure 1. Similarly, Figure 2 does not disclose an algorithm, and states no information about how to

determine a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address. Col. 5:5-19 discusses the "visual editor 19," "wordified database 20," "grammar parser 23," and "link engine 22," but nothing in that section explains how to determine the starting and ending point addresses. Col. 7:1-10 discusses the "word cutting process," but again has no information about determining starting and ending point addresses. Col. 7:21-49 discusses that the "start" and "end points" of text are "recorded in a look-up table," which is then used for "comparing" with the "offset." This section, however, does not explain how the "start" and "end points" are actually determined. Col. 8:29-32 and Col. 8:39-48 describe the "pull-down" menu structure of an "electronic viewer module" and state nothing about determining "starting" and "ending point addresses.". Accordingly, Sentius has failed to identify anything even remotely resembling an algorithm for the function of determining a starting point address and an ending point address of at least one of the plurality of discrete pieces based upon the beginning position address.

"means for recording in a look-up table the starting and ending point addresses"

125.   I was asked to opine about the meaning that the claim limitation "means for recording in a look-up table the starting and ending point addresses" would have to a person of ordinary skill in the art.

126.   In my opinion, the claimed function is "recording in a look-up table the starting and ending point addresses" of the plurality of discrete pieces. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This

phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

127.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '633 Patent, it is my opinion that nothing in the '633 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '633 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

128.   It is my understanding, however, that a narrow and rare exception exists where a means-plus-function limitation that does not have corresponding structure or an algorithm in the patent specification may still be permissible if any general purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. It is my understanding that this exception generally extends to "storing" data.

129.   It is my opinion that this limitation involves the narrow exception discussed in the preceding paragraph. One skilled in the art would understand that the function of "recording in a look-up table the starting and ending point addresses" of the plurality of discrete pieces could be performed by a general purpose computer, because this function is the same as the generic function of "storing" that may be performable by any general purpose computer. Based on my review of the '633 Patent, it is my opinion that the '633 Patent

discloses a structure to perform the function recited in this limitation; that structure is "a personal computer programmed to record in a look-up table the starting and ending point addresses" of the plurality of discrete pieces. The corresponding structure is found in Column 4, Lines 7-8.

130. I also note that Sentius claims that this limitation is not a means-plus-function limitation and also identified in its disclosures the following portions of the '731 Patent: "visual editor 19 and wordified database 20 in Fig. 1 and Fig. 2 of the Patents-in-Suit and Col. 5:5-15, 6:46-65, 7:1-10, 7:40-45, 8:29-32 and 8:39-48 of the '731 Patent." To the extent Sentius asserts the '731 Patent discloses an algorithm for this process of recording, I disagree, as none is disclosed in the above citations, beyond the "personal computer" disclosed at Column 4, Lines 7-8.

"means for linking the plurality of discrete pieces to external reference materials by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference materials, the external reference materials comprising any of textual, audio, video, and picture information"

131. I was asked to opine about the meaning that the claim limitation "means for linking the plurality of discrete pieces to external reference materials by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference materials, the external reference materials comprising any of textual, audio, video, and picture information" would have to a person of ordinary skill in the art.

132. In my opinion, the claimed function is "linking the plurality of discrete pieces to external reference materials by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference

materials, the external reference materials comprising any of textual, audio, video, and picture information." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure or algorithm for performing the recited function. In my opinion, the language of this limitation partially conveys to one of ordinary skill in the art the requisite structure to perform the "means for linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials." Namely, it recites that this is done "by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference materials, the external reference materials comprising any of textual, audio, video, and picture information" However, the limitation does not recite the "personal computer," which is disclosed at Column 4, Lines 7-8 of the '731 Patent, and would be needed to perform this recording. In addition, the '731 Patent does not disclose an algorithm in any form (pseudocode, mathematical formulas, prose, flow charts, and the like) for this "recording.".

133.   It is my understanding, however, that a narrow and rare exception exists where a means-plus-function limitation that does not have corresponding structure or an algorithm in the patent specification may still be definite if any general purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. It is my understanding that this exception generally extends to "storing" data.

134.   Thus, it is my opinion that this limitation involves the narrow and rare exception explained above, where a means-plus-function limitation that does not have corresponding structure or an algorithm in the patent specification may still be permissible if any general

purpose computer could perform the recited function without any special programming, as long as the patent specification discloses a microprocessor or general computer. In this instance, the "recording" portion of the "means for linking" limitation falls under this exception in that a general purpose computer performing the generic function of "storing" data can perform this "recording" function. Also, as stated above, it is my opinion that the language "by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference materials, the external reference materials comprising any of textual, audio, video, and picture information" – describes the algorithm by which a general purpose computer would perform the linking function recited by this limitation.

135.   Thus, it is my opinion that one skilled in the art would understand that the function of "linking the plurality of discrete pieces to external reference materials by recording in the look-up table, along with the starting and ending point addresses of the plurality of discrete pieces, links to the external reference materials, the external reference materials comprising any of textual, audio, video, and picture information" can be performed by a general purpose computer via the algorithm recited in this limitation.   Accordingly, the structure is "personal computer programmed to record in the look-up table, along with the starting and ending point addresses of the at least one of the plurality of discrete pieces, a link to the at least one of the plurality of external reference materials, the plurality of external reference materials comprising any of textual, audio, video, and picture information." The corresponding structure is found in Column 4, Lines 7-8.

136.   I also note that Sentius claims that this limitation is not a means-plus-function limitation and also identified in its disclosures the following for structure: "a processor storing

- 51 -

a pointer in the data structure for a given offset value range that points the system to at least one corresponding external reference material for that offset value range, and equivalents thereof," citing "link engine 22, wordified database 20, grammar parser 23 linked entities 25, 26, 27 indexor 29, [and offset index 35] in Fig. 1 and algorithm described in Fig. 2 of the '731 Patent at look-up table 201/202 and Col. 5:5-28, 6:46-65, 7:11-20, 7:29-49, 8:29-32 and 8:39-48 of the '731 Patent." To the extent Sentius asserts that this limitation is not a mean-plus-function limitation, I disagree, because, "means for linking at least one of the plurality of discrete pieces to at least one of a plurality of external reference materials" is a means-plus-function limitation that requires sufficient structure in order to perform the function, as described above, and none of the above citations disclose an algorithm for "recording," beyond the "personal computer" described at Column 4, Lines 7-8. In fact, most of Sentius's citations appear completely unrelated to this claim limitation.

"means for selecting a discrete portion of an image of the source material"

137.   I was asked to opine about the meaning that the claim limitation "means for selecting a discrete portion of an image of the source material" would have to a person of ordinary skill in the art.

138.   In my opinion, the claimed function is "selecting a discrete portion of an image of the source material." I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited

in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

139.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this limitation. Based on my review of the '633 Patent, it is my opinion that the '633 Patent discloses structure to perform the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "a personal computer," an "electronic display of a personal computer" and Column 6, Lines 50-51, which recites: a "pointing device, such as a mouse."

140.   I also note that Sentius identified in its disclosures the following for structure: "a processor determining the location on a display where a user input was received." This, is incorrect, and it actually does not relate to this limitation but instead to the function provided by the next limitation in Claim 95: "means for determining a display address of the selected discrete portion." In order to select displayed text as this limitation requires, the specification discloses using a "pointing device" and of course the "personal computer" and "electronic display" are necessary structure, otherwise one using the pointing device wouldn't be able to select anything or see what was being selected.

"means for determining a display address of the selected discrete portion"

141.   I was asked to opine about the meaning that the claim limitation "means for determining a display address of the selected discrete portion" would have to a person of ordinary skill in the art.

- 53 -

142.   In my opinion, the claimed function is "determining a display address of the selected discrete portion" of the image of the source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

143.   One skilled in the art would understand that the function of "determining a display address of the selected discrete portion" of the image of the source material cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. For example, this function is not analogous to the generic function of "processing" that may be performable by any general purpose computer. Rather, "determining a display address of the selected discrete portion" of the image of the source material is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function.

144.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '633 Patent, it is my opinion that nothing in the '633 Patent discloses an algorithm to perform this function. In coming to this conclusion, I looked in the '633 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

145.   I also note that Sentius identified in its disclosures the following for structure: "a processor determining the display coordinates of the user input. Not MPF. (But see, User interface 32, user display 38, application program 42, data resource 34, offset index 35 and linked entities 36 of Fig. 1 together with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:46-65 and 7:40-49 of the '731 Patent.)"   Nowhere in the specification, however, including the citations provided by Sentius, is there a "step-by-step procedure" for performing this function.

146.   Specifically, none of Sentius's identified citations provide an algorithm for actually determining the "display coordinates of the user input." The various items listed by Sentius in Figure 1 are simply black boxes that do not describe how to perform the identified function. The description of Figure 1 at Col. 5:20-33 provides no further information. Figure 2 describes display coordinates that were clicked (100, 75); however, it provides no algorithm for how those coordinates were determined. Col. 6:46-65, which describes Figure 2, states the "click position is determined," but again doesn't explain how this is accomplished, *i.e.*, it doesn't provide an algorithm. Col. 7:40-49 has a similar disclosure, but again doesn't explain how the "location of the pointer is determined." Accordingly, Sentius has failed to identify

anything even resembling an algorithm for the function of determining a display address of the selected discrete portion.

"means for converting the display address of the selected discrete portion to an offset value from the beginning position address"

147.   I was asked to opine about the meaning that the claim limitation "means for converting the display address of the selected discrete portion to an offset value from the beginning position address" would have to a person of ordinary skill in the art.

148.   In my opinion, the claimed function is "converting the display address of the selected discrete portion to an offset value from the beginning position address" of the textual source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

149.   One skilled in the art would understand that the function of "converting the display address of the selected discrete portion to an offset value from the beginning position address" of the textual source material cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a

particular algorithm to perform this function. For example, this function is not analogous to the

generic function of "processing" that may be performable by any general purpose computer.

Rather, "converting the display address of the selected discrete portion to an offset value from

the beginning position address" of the textual source material is a specialized function

particular to this purported invention, and it would require a particular algorithm. Based upon

my knowledge and experience, a general purpose computer cannot do this unless it is specially

programmed to do so. It is my understanding that, in a situation like this, where the function is

only performable by a general purpose computer that is specially programmed, the

specification must disclose an algorithm for performing the function.

150.   I was also asked to provide an opinion as to whether the '633 Patent discloses

any structure or algorithm for performing the function recited in this phrase. Based on my

review of the '633 Patent, it is my opinion that nothing in the '633 Patent discloses an

algorithm to perform this function. In coming to this conclusion, I looked in the '633 Patent for

an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts,

and the like. I did not locate an operative algorithm for this claimed function.

151.   I note that Figure 2, and the corresponding text in the specification, show a user

clicking at the horizontal and vertical coordinates of (100,75) (i.e., 100 rows down, and 75

columns over) and then an offset value of "25" being returned. *See* '731 Patent, Col. 6, Lines

51-57. This does not describe a simple algorithm of subtracting 75 from 100. And even if it

did, that algorithm would not perform the claimed function, as this does not provide an offset

"from the beginning position address." As a demonstration of this, assume a user clicks at

horizontal coordinates of (125, 100). This too would return an offset of "25." But plainly (125,

100) is further from the "beginning position address" than (100, 75).   Perhaps a clear

demonstration is if the coordinates (200, 200) are selected. If simple subtraction were the algorithm, the offset would be "0." This would indicate the "beginning position address" was selected, which certainly is not the case.

152.   I also note that Sentius identified the following portions from the specification as disclosing the structure: "User interface 32, user display 38, application program 42, data resource 34, offset index 35 and linked entities 36 of Fig. 1 together with mouse /position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:46-65 and 7:40-49 of the '731 Patent.)." There, however, is no step-by-step procedure disclosed in any of these citations for how to determine the offset value from the beginning position address.

153.   Specifically, the various items listed by Sentius in Figure 1 are simply black boxes that do not describe how to perform the identified function. The description of Figure 1 at Col. 5:20-33 provides no further information. Figure 2 describes that an offset value of "2" is determined; however, it provides no algorithm for how those coordinates were determined. Col. 6:46-65, which describes Figure 2, states "an offset value of 25 is returned," but again doesn't explain how this is accomplished, *i.e.*, it doesn't provide an algorithm. Col. 7:40-49 has a similar disclosure, but again doesn't explain how the "position offset from the beginning of the text" is determined. Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of converting the display address of the selected discrete portion to an offset value from the beginning position address.

"means for comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces"

154.   I was asked to opine about the meaning that the claim limitation "means for comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces" would have to a person of ordinary skill in the art.

155.   In my opinion, the claimed function is "comparing the offset value with the starting and ending point addresses recorded in the look-up table to identify one of the plurality of discrete pieces" of textual source material. I was asked to provide an opinion as to whether the language of this limitation would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

156.   I was also asked to provide an opinion as to whether the '731 Patent discloses any structure or algorithm for performing the function recited in this phrase. Based on my review of the '731 Patent, it is my opinion that the '731 Patent discloses structure to perform the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "a personal computer," and Figure 2, Column 6, Lines 56-65 and Column 7, Lines 45-49, which describe "a personal computer programmed to determine whether the offset

value falls between the starting and ending point addresses for the plurality of discrete pieces of textual source material stored in the look-up table to identify one of the plurality of discrete pieces of textual source material as a match when the offset value falls between that discrete piece's starting and ending point addresses."

157.   I also note that Sentius claims that the structure for this function is "a processor programmed to perform the step of matching the identified offset value with one of the offset value ranges stored in the data structure, and equivalents thereof," citing "User Interface 32, user display 28, application program 42, data resource 34 and offset index 35 of Fig. 1 together with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:48-65 and 7:40-49 of the '731 Patent to match the identified offset value with one of the offset value ranges stored in the data structure."   Sentius's explanation of the structure, however, is circular, because it does not explain how the "matching" occurs.   As I described above, and as is explained in the specification, this matching occurs by comparing the offset value against the start and end points of each discrete piece in the look-up table and identifying a match when the offset values falls within the start and end points of a discrete piece.

"means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces"

158.   I was asked to opine about the meaning that the claim limitation "means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces" would have to a person of ordinary skill in the art.

159.   In my opinion, the claimed function is "selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces."   I

was asked to provide an opinion as to whether the language of this phrase would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

160.   The language "means for selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces" also does not specify with reasonable certainty to one of ordinary skill in the art the scope of the limitation. Because "selecting" must mean something different from "identifying" that is in the previous limitation, this limitation possibly refers to the process of creating a dropdown box and allowing a user to select one of the dropped down options, as illustrated in Figure 3. This is not entirely clear from the claim language and specification though.

161.   It is my opinion that the function of "selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces" cannot be performed by any general purpose computer, but instead must be performed by a general purpose computer specially programmed with a particular algorithm to perform this function. The function is not analogous to the generic function of "processing" that may be performable by any general purpose computer. Rather, "selecting one of the plurality of

external reference materials corresponding to the identified one of the plurality of discrete pieces" is a specialized function particular to this purported invention, and it would require a particular algorithm. Based upon my knowledge and experience, a general purpose computer cannot do this unless it is specially programmed to do so. It is my understanding that, in a situation like this, where the function is only performable by a general purpose computer that is specially programmed, the specification must disclose an algorithm for performing the function. The '633 Patent does not do that, no matter how this limitation is interpreted.

162.   To the extent the limitation refers to creating a pop-up menu and allowing a user to select from the menu, as illustrated in Figure 3, there is no algorithm set forth in the '731 Patent for how that would occur. In coming to this conclusion, I looked in the '731 Patent for an algorithm expressed in any form: pseudocode, mathematical formulas, prose, flow charts, and the like. I did not locate an operative algorithm for this claimed function.

163.   I also note that Sentius claims that the structure for this function is: "Structure: a processor programmed to perform the step of using the pointer for the matched offset value range to identify a corresponding external reference material, and equivalents thereof (See, User interface 32, pop-up display 40, application program 42 and table 202 of Fig. 2 together with mouse/position 200, look-up table 201/202, link 203 and display 204 of Fig. 2 of the Patents-in-Suit and algorithm described at Col. 5:20-33, 6:48-65, 7:20-39 and 7:42-49 of the '731 Patent to obtain the linking information to the corresponding reference material for the matched offset value.)."

164.   Sentius's interpretation, however, cannot be correct. Sentius appears to be confused as to what the claim recites. Sentius indicates that this limitation "identifie[s] a corresponding external reference material."   But   the previous limitation claimed that

identification: "means for comparing the offset value with the starting and ending point addresses recorded in the look-up table *to identify one of the plurality of discrete pieces*." In fact, the present limitation sets forth that "one of the plurality of discrete pieces" has already been "*identified*." I also note that none of Sentius's citations to the patent disclose the process of how one or more discrete pieces are displayed to the user for selecting. Accordingly, Sentius has failed to identify anything resembling an algorithm for the function of selecting one of the plurality of external reference materials corresponding to the identified one of the plurality of discrete pieces.

"means for displaying on a computer the selected one of the external reference materials"

165.   I was asked to opine about the meaning of the claim limitation "means for displaying on a computer the selected one of the external reference materials" would have to a person of ordinary skill in the art.

166.   In my opinion, the claimed function is "displaying on a computer the selected one of the external reference materials." I was asked to provide an opinion as to whether the language of this phrase would be understood by a person of ordinary skill in the art to connote a definite, particular structure for performing the recited function. In my opinion, this limitation does not convey to a person of ordinary skill in the art anything about a particular structure that could be used to perform the recited function. This phrase, while made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '633 Patent. Instead, this appears to be merely an abstraction that describes the function being performed without identifying any structure in particular. Finally, this term does not identify any structure by its function; it is merely a functional recitation independent of a particular, required structure.

167.   I was also asked to provide an opinion as to whether the '633 Patent discloses any structure or algorithm for performing the function recited in this limitation. Based on my review of the '633 Patent, it is my opinion that the '633 Patent discloses structure to perform the function recited in this limitation. The corresponding structure is found in Column 4, Lines 7-8 which recites: "a personal computer" and an "electronic display of a personal computer."
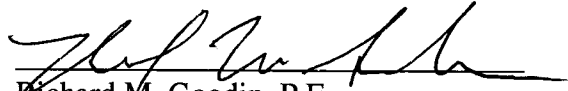
168.   I also note that Sentius identified in its disclosures the following for structure: "a processor displaying obtained reference material." This, however, cannot be correct because a "processor" cannot display anything. To display something, you need a display. As a simple demonstration, if one unplugs his or her monitor, his or her computer will not display anything. While a processor might be able to send data for display, it cannot actually accomplish the function of displaying. Similarly, the "personal computer" is part of the requisite structure, because a monitor or display cannot perform this function unless there is a computer that can actually send the information to be displayed.

169.   Additionally, Sentius references in its disclosures "description in connection with user interface 32, pop-up display 40, user display 38 and electronic viewer 43 in Fig. 1 and display 204 in Figures 2 and 3 of the Patents-in-Suit at Col. 5:29-44, 6: 57-62, 7:37-40 and 7:51-55 of the '731 Patent." These citations reference "displaying," but don't reference the actual structure used to display. The citations also reference a "screen display" in Figure 3. This is an example of what would be displayed on the "electronic display" of the "personal computer." Figure 3 by itself though is just an exemplar of what is displayed, and not actual structure capable of doing the displaying.

*** Signature Page Follows***

I hereby declare under the penalty of perjury that the statements herein are true

and correct to the best of my knowledge and belief.

Signed April _11_, 2017 in ___Apex   NC_____

Richard M. Goodin, P.E.

Richard M. Goodin, PE

5448 Apex Peakway ● Suite 191 ● Apex NC 27502-3924
rich@goodin.com ● (919) 362-1396

Goodin & Associates, Inc., Apex, NC. *February 1990 – Current.*
President/Chief Consultant - consulted on various projects including the following:

Hardware:
 ● Developed an electronics package for an underwater rebreather. Responsibilities included system electronics architecture, board design on all system boards, board bringup, firmware architecture and gas control firmware implementation.

 ● Provided VGA expertise to design team designing new VGA core for client's graphics accelerators.

 ● Developed an FPGA based system on chip implementation for military applications. Responsibilities included system electronics architecture, board design on all system boards, FPGA synthesis, and board bringup.

 ● Architect and implement a 2D graphics and video accelerator for palmtop to light laptop use. Responsibilities included system architecture and system design in Verilog.

 ● Architected and implemented a high reliability 10GigE Fabric Link for an MPLS switch. Responsibilities included Verilog design and synthesis.

 ● Testing and analysis of extensions to current graphics architecture to meet Xbox graphics requirements.

 ● Developed a high performance 32 bit VGA module in synthesizable Verilog designed to provide VGA compatibility for 3D systems. Responsibilities included design, compatibility testing and synthesis. Eventually resold implementation to 6 companies with a variety of simulation, synthesis and verification requirements.

 ● Architected and assisted in design of a hardware add-on processor to accelerate OpenGL and DirectX 7 transform and lighting.

 ● CDRAM evangelist. Promoted and assisted adoption of Mitsubishi's CDRAM technology for use in graphics systems.

 ● Architected and assisted in design of a medium performance 3D accelerator chip using embedded DRAM technology.

 ● Participated in the simulation, testing and development of a high performance graphics accelerator for the DEC Alpha architecture.

 ● Architected and developed a Verilog based multiprocess hardware simulation environment for hardware verification.

Software:
 ● Implemented 2D Windows 2000 and Windows XP drivers for Peritek hardware.

 ● Architected OpenGL and DirectX firmware for massively parallel MIMD implementation. Responsibilities include development of software architecture, software functional simulator and development of interface software for Verilog simulation.

 ● Implemented an OpenGL port for Voodoo graphics hardware optimized for game requirements.

 ● Participated in the architecture and development of Data General's Aview graphics library.

 ● Developed high speed anti-aliasing algorithms targeted at an Intel i860 based multiprocessor graphics accelerator.

08/05/16
1

Litigation:
- Software/non-infringement analysis in support of a non-infringement case in the areas of graphics rasterization.

- Software analysis in support of a case in the areas of chip to chip communication.

- Non-infringement analysis in support of a non-infringement case in the areas of sign printer/cutters.

- Infringement analysis in support of an infringement case in the areas of touchscreens, device, OS and user interface features of smartphones.

- Software analysis in support of an infringement case in the area of internet television.

- Software analysis in support of a non-infringement case in the area of texture compression.

- Software analysis in support of an infringement case in the areas of digital cameras and image processing.

- Software analysis in support of an infringement case in the areas of digital flat panel television.

- Software analysis in support of an infringement case in the area of digital imaging.

- Software analysis in support of an infringement case in the areas of video scaling, user interface and digital audio.

- Verilog analysis in support of an infringement case in the area of DMA devices.

- Analyzed Intel processor and chipset implementations in IHDL and VHDL to look for infringing implementations.

- Analyzed Intel and Via chipset implementations in VHDL and Verilog source to look for infringing implementations.

Apple Computer, Cupertino, CA. *November 2004 – October 2006.*
Senior Engineer:
Lead engineer responsible for architecture and implementation of Apple's proprietary EFI graphics extensions across Nvidia, ATI and Intel based platforms. Responsibilities included system architecture and driver design. Implemented Intel drivers for two generations of Intel graphics architectures. Represented Apple in negotiations with EFI group at Intel. Interfaced with driver developers at NVidia and ATI.

Raydiant, Inc., Santa Clara, CA. *January 1999 – October 1999.*
Chief Scientist:
Lead hardware and software architect for advanced scalable PC graphics accelerator. Responsibilities included research and development of hardware acceleration of advanced graphics features and managing architecture group.

Sun Microsystems, Morrisville, NC. *April 1988 - January 1990.*
Member of Technical Staff/Architect:
- Co-architected and implemented the Renderman compliant, high-quality rendering component of Sun's SunVision visualization product.

- Co-architected Sun's XGL proprietary graphics library.

- Developed new approaches for the graphics library and windowing software for a multiprocessor, i860 based, visualization accelerator.

- Ported SunPHIGS to Sun's TAAC-1 application accelerator.

- Implemented NURBS curve and surface extensions to the TAAC-1 graphics library.

08/05/16

Sun Microsystems, Mountain View, CA. *January 1987 - March 1988*.
Software Manager
    Managed a ten person group developing software for direct surface rendering accelerator.

Quanta Corporation, Salt Lake City, UT. *August 1985 - January 1987*.
Project Engineer/Graphics
    Specifically hired for the purpose of developing a high performance, real-time 3D animation system for use in video production.

Racore Corporation, Salt Lake City UT. *March 1985 - August 1985*.
Chief Engineer
    Conceived, designed, implemented and readied for production a very low cost LAN for the IBM PC family.

Evans & Sutherland, Salt Lake City, UT. *November 1981 - March 1985*.
Advanced Development
    Worked directly with Vice President of Advanced Development to research and develop new graphics directions.

Project Engineer
    Developed three software and two hardware products to integrate the PS300 graphics display system into the IBM environment.

Sperry Univac GSD, Salt Lake City, UT. *January 1979 - November 1981*
Project Engineer
    Wrote communications, display and peripheral microcode for a sophisticated terminal featuring advanced windowing and virtual communications.

Education:
    Bachelors of Electrical Engineering, University of Delaware, September 1976 – December 1978. Minor in Mechanical Engineering. Completed 4 year program in 2 ½ years.

Professional:
    Senior Member IEEE
    Senior Member ACM
    Member AIPLA

    Registered to practice before the United States Patent and Trademark Office

    Licensed as a Professional Engineer in the state of North Carolina

Richard M. Goodin Testimony In Previous Four Years

- *Elbit Systems Land and C41 Ltd. and Elbit Systems of America, LLC v. Hughes Network Systems, LLC, Bluetide Communications, and Country Home Investments, Inc*. Case No. 2:15-cv-00037-RWS-RSP (Eastern District of Texas) Source code expert on behalf of Elbit opposing Hughes, deposition March 14, 2017.

- *Electronic Arts v. Terminal Reality*, (IPR2016-00928, IPR2016-00929, IPR2016-00930 (PTAB)) Invalidity Expert on behalf of Electronic Arts, deposition January 26, 2017

- *Global Equity Management (SA) Pty. Ltd. v. Airbnb, Inc. et al.* Case Nos. 15-cv-01700, 16-cv-95, 16-cv-96, 16-cv-97, 16-cv-98, 16-cv-99, 16-cv-100, 16-cv-101, 16-cv-102, 16-cv-103, and 16-cv-104 (Eastern District of Texas) in support of claim construction on behalf of Airbnb, et al., deposition September 6, 2016

- *Certain Computing or Graphics Systems, Components Thereof, and Vehicles Containing Same*, (U S International Trade Commission, Inv. No 337-TA-984), Software and Hardware Analysis expert on behalf of Renesas, deposition August 2, 2016.

- *CareCloud Corporation v. Athenahealth, Inc.,* (CBM2014-00143 (PTAB)) Validity Expert on behalf of Athenahealth, deposition 5/6/2015.

03/14/17